

The Dangers of Mercury

Contamination of a Lincoln Apartment

On July 3, 1997 the Lincoln-Lancaster County Health Department (LLCHD) was notified and began an investigation of a reported metallic mercury spill in a central Lincoln apartment. A recent occupant of the apartment complained of joint and muscle aches, red sensitive skin, nausea and sleeplessness after being exposed to high amounts of mercury. The apartment occupant was tested for mercury poisoning and was found to have a blood mercury level 4 to 6 times the normal level.

When contacted, the complainant reported collecting more than 2 tablespoons of mercury from the floor and carpet of the Lincoln apartment using his hands and a vacuum cleaner. The mercury was present in the apartment when the occupant moved in on April 1, 1997. Following an initial investigation of the contaminated apartment, mercury vapor levels in the dwelling varied from 60 to 600 ug/m³. The Agency for Toxic Substances and Disease Registry (ATSDR) recommends a level no higher than 0.3 ug/m³ of metallic mercury for adequate health protection and a safe environment. Upon further investigation, it appeared that the tenant immediately preceding the complainant may have been responsible for the mercury spill and contamination.

Several other individuals were affected by the mercury contamination in the Lincoln apartment. They include: the complainant's wife, a tenant who moved into the apartment after the complainant for a short period of time but before the health department was notified of the contamination, and this tenant's ex-wife and child. Others who were part of LLCHD's investigation and potentially affected by the mercury were: a professional carpet cleaner who cleaned between apartment occupancies, the owner of the apartment, the apartment's property manager, and another family that had their carpet cleaned by the aforementioned carpet cleaner (this was a

problem because mercury remained in the vacuum and its hose).

Within the contaminated apartment, mercury was found in large visible droplets in the carpet, flooring, subflooring, sill plate, outside entry stoop, crawl space dirt, and sink drains. LLCHD estimates that one pint of mercury was recovered from the apartment, and that the cost of the total decontamination was approximately \$17,500.

Epidemiological follow up in this case was hampered by difficulty in contacting and obtaining cooperation from potentially harmed individuals to test their exposure levels. This is a fairly common difficulty in epidemiological response to communicable disease outbreaks, environmental hazards and other public health threats. Transiency of populations, suspicion of public officials, communication barriers, and illegal activity can all create barriers to identification, testing, and treatment of all ill persons. Of the persons who were tested (10), three individuals had extremely high levels of mercury in their bodies and were given chelation treatment, seven persons had normal mercury levels, and an additional three individuals were not tested due to noncooperation.

What is Mercury?

Mercury is a heavy, silver-colored, poisonous metallic element that remains in a liquid state at room temperature and with exposure to the air can exist as a colorless vapor. There are two main types of mercury: organic mercury (for example, methylmercury) and inorganic mercury (metallic mercury). Mercury, also referred to as quicksilver, is found naturally in the environment and is an added component of many consumer goods. A wide range of household products that are used daily may contain mercury, including: thermometers, barometers, batteries,

fluorescent light bulbs, electrical switches, mildew-proof paint, mirror coating, skin-lightening products and antiseptic creams. Mercury can also be found in the dental amalgam used for dental restoration and is used in the processing of some chemicals.

Where Can Mercury Be Found in the Environment?
Mercury is released into the environment from natural as well as human-made sources. The major source of mercury in lakes, soil, and vegetation in the United States is from human activities. Mercury enters the environment by four main processes; (1) during energy production processes, (2) through incidental release as the result of industrial activity, (3) through release as the result of intentional use of mercury, and (4) through accidental release in the home. Mercury emitted during energy production includes processes used to make coal and also from fossil fuel power stations. Industrial activities that release mercury into the environment include cement production or metal mining. Mercury emitted by intentional use includes such practices as the disposal of batteries and fluorescent lamps, and hazardous waste and biomedical waste incineration.

Mercury Poisoning: its Symptoms and Side Effects

Exposure to mercury occurs when you breathe

mercury-contaminated air, ingest mercury-contaminated water or food, or allow mercury to touch and pass through your skin. Currently there is little evidence that dental amalgam is an important source of mercury poisoning, however routine consumption of mercury-contaminated fish is one of the most common ways to be exposed to mercury. Consuming fish from lakes with fish advisories should be avoided.

Symptoms associated with mercury poisoning include: tremors and shaking, trouble remembering and concentrating, gum problems (gingivitis), skin rashes, loss of appetite and weight, changes in mood and personality, and changes in vision and hearing abilities. It is important to note that harm from mercury exposure can begin months before symptoms arise. Fetuses are especially susceptible to damage from exposure to mercury, thus pregnant women should be particularly careful to avoid exposure.

When high levels of mercury are found in the body, "chelation" therapy is necessary. Chelation therapy involves putting a chemical into the bloodstream; the chemical then combines with the mercury to aid in its removal from the body. The body rids itself of the mercury

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